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Model of Lung Cancer Screening Implementation: Is it Interoperable?

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Objectives

Describe the delivery of lung cancer screening in a centralized face-to-face, Nurse Practitioner led, program.

Discuss the benefit of detection of tobacco related diseases and prevention of disease through smoking cessation, in the setting of lung cancer screening.

Consider the value of a centralized program in the reduction of potential psychological and physical harms of lung cancer screening.

Review methods of billing, coding, the reimbursement platform, operational and financial feasibility of a centralized screening program.

Disclosures

No financial or vested interests in the information provided within this presentation

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The Spirit of our Work: Meeting Quality Standards in Clinical Programs

Six Dimensions of Quality Healthcare
Institute of Medicine, Don Berwick

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Swedish Cancer Institute Division of Thoracic Surgery & Interventional Pulmonology

- 4 Hospital Medical Center
- 4 Thoracic Surgeons
- 2 Interventional Pulmonologists
- 2 ARNPs for surgical services
- 2 ARNP for Lung Cancer Screening Program
- 2 On-site Lung Cancer Screening Service Locations

History of Lung Cancer Screening at Swedish

- Participants in the International Early Lung Cancer Action Program (IELCAP) since 2000
- Designed and operationalized lung cancer screening program, November 2012 (pilot)
- Formal Tobacco Related Diseases and Lung Cancer Screening Program launched March 2013

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When it Comes to Tobacco Related Diseases, We Can All Agree on This!

- **Tobacco related diseases, including lung cancer, are too often disabling and deadly**

- **Best way to impact tobacco related diseases**
  - Early detection
  - Better treatments for advanced disease
  - Primary prevention from ever smoking
  - Effective smoking cessation

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1 out of 5 Americans Smoke

8 Million Meet Eligibility Criteria for Lung Cancer Screening

42 Million Current Smokers in US

http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/

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Tobacco Related Diseases are Costly

- **$7.00/ pack of cigarettes smoked are spent on health care for tobacco related diseases = $150 Billion in healthcare expenditure**
- **$150 Billion loss in productivity**
- **1 in 5 smokers will die of a tobacco related disease, 10 years before their never smoking peers**

Jha, P et al. NEJM 368: 341, 2013
MMWR Morb Mortal Wkly Rep 2001; 51 (14): 300-303

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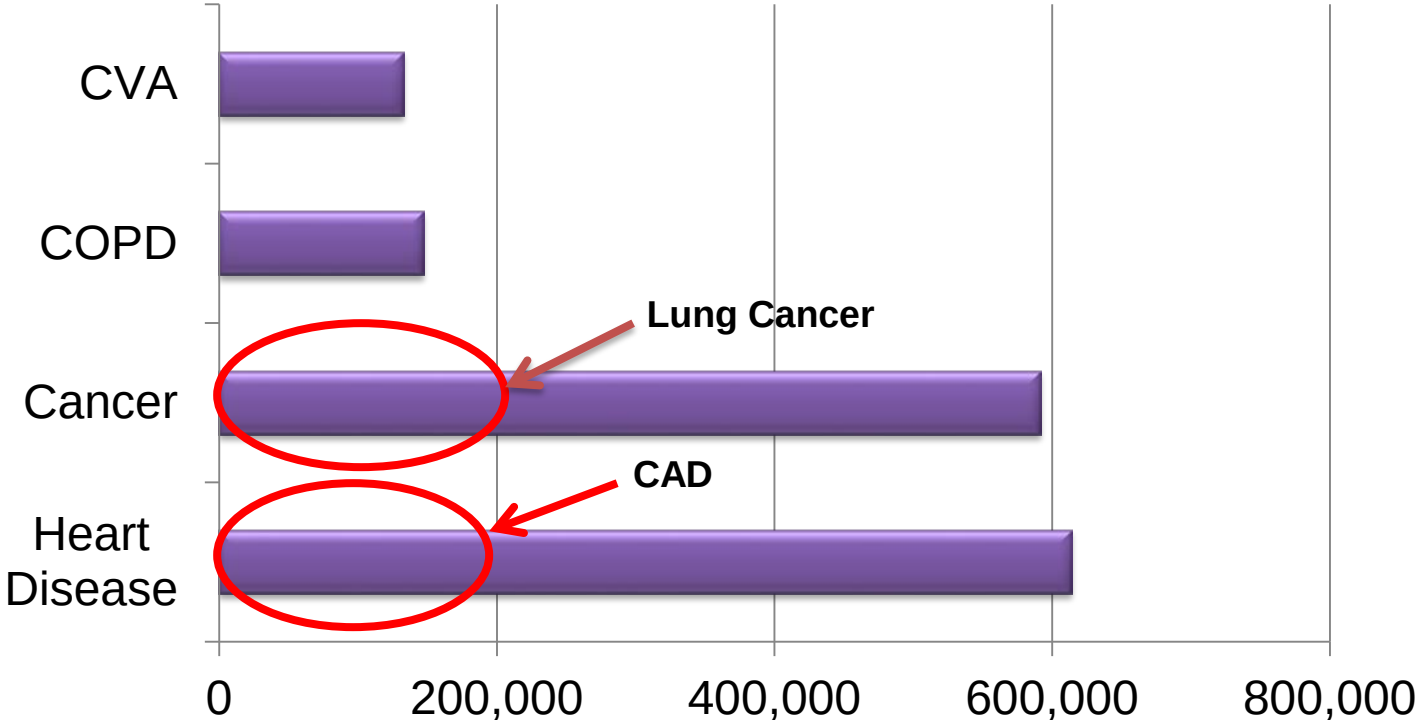
Tobacco Related Diseases Leading the Top Four Causes of Death in U.S.



http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm
http://www.lung.org/assets/documents/research/copd-trend-report.pdf

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Data on Quitting

Interest in Quitting

- 70% want to quit
- 52% make a quit attempt every year
- 3-5% successfully quit on their own

Benefit of Multi-Modal Therapy

- 3% quit on advice alone
- 10% with counseling
- 70-100% with counseling, medication treatment, and clinical follow-up

Stead, L. F. and T. Lancaster (2012). "Combined pharmacotherapy and behavioural interventions for smoking cessation." Cochrane Database Syst Rev

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Where is the common place in which we can apply this data and impact health outcomes?

Lung Cancer Screening!

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Challenges in Lung Cancer Screening

1. Determination of eligibility and the need for Shared Decision Making
2. Volumes of patients and nodules
3. Potential variation in delivery, interpretation, and reporting of low dose CT scan
4. Potential for variation in nodule management and harm
5. Ensuring safe and quality outcomes
6. High risk for losing nodules to follow-up
7. Managing incidental findings on Low Dose CT scan
8. Accommodating CMS registry data requirements
9. Smoking as a cancer risk and modifiable behavior
10. High potential for psychological distress when nodules are detected

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Psychological Impact of Screening: It Is Real

- Did not understand the language
- Did not understand the implications of the findings
- Found the term “nodule” baffling
- Most over estimated the risk of cancer at 50/50 when their real risk was 3%.
- Felt that a dangerous situation was being ignored
- Most people sought outside opinion and care
- Most patients did not have adequate knowledge
- The info they obtained was misleading and inaccurate
- Patients were fearful of what they might learn and used active avoidance to cope

Slatore, C. G., et al. (2013). "What the heck is a "nodule"? A qualitative study of veterans with pulmonary nodules." Ann Am Thorac Soc 10(4): 330-335

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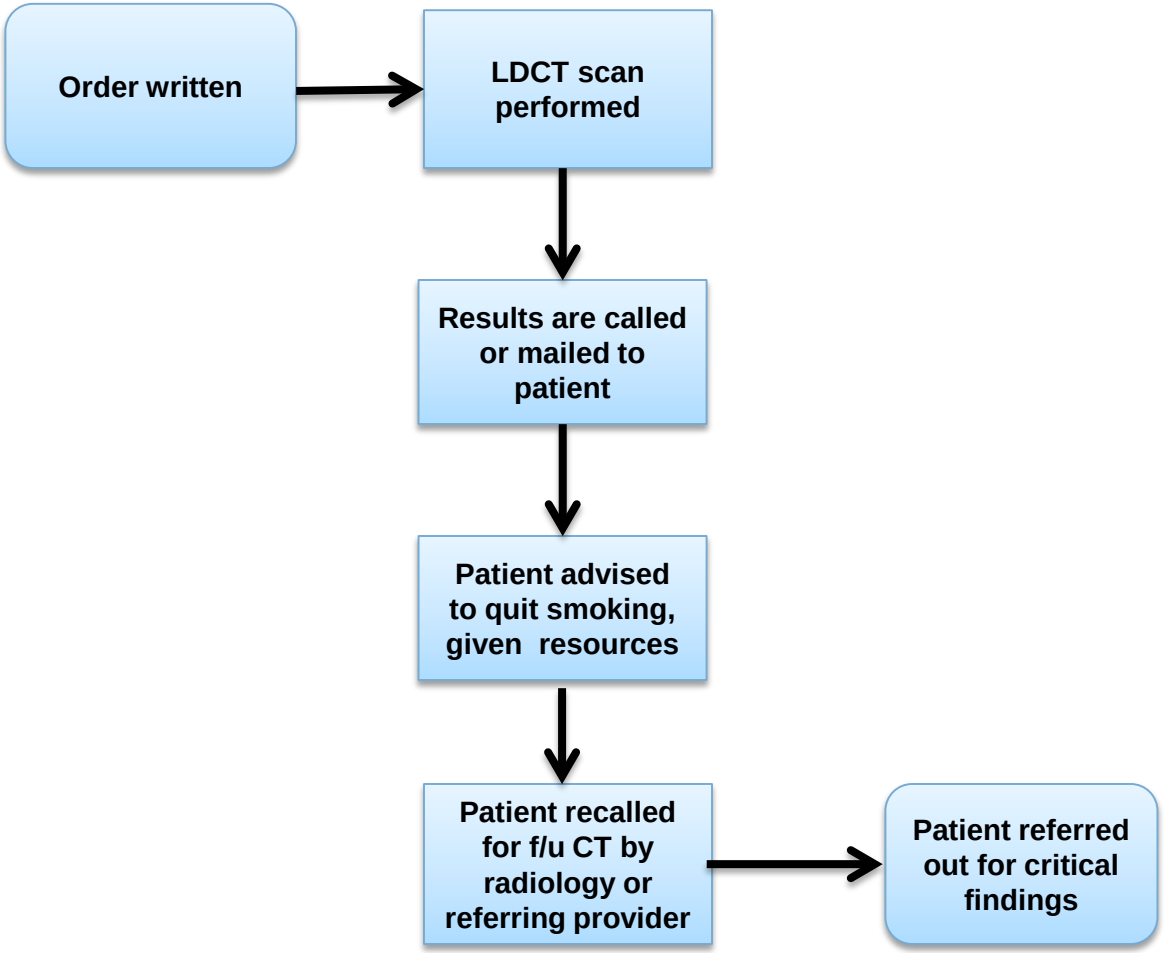
Decentralized Lung Cancer Screening: The Traditional Model



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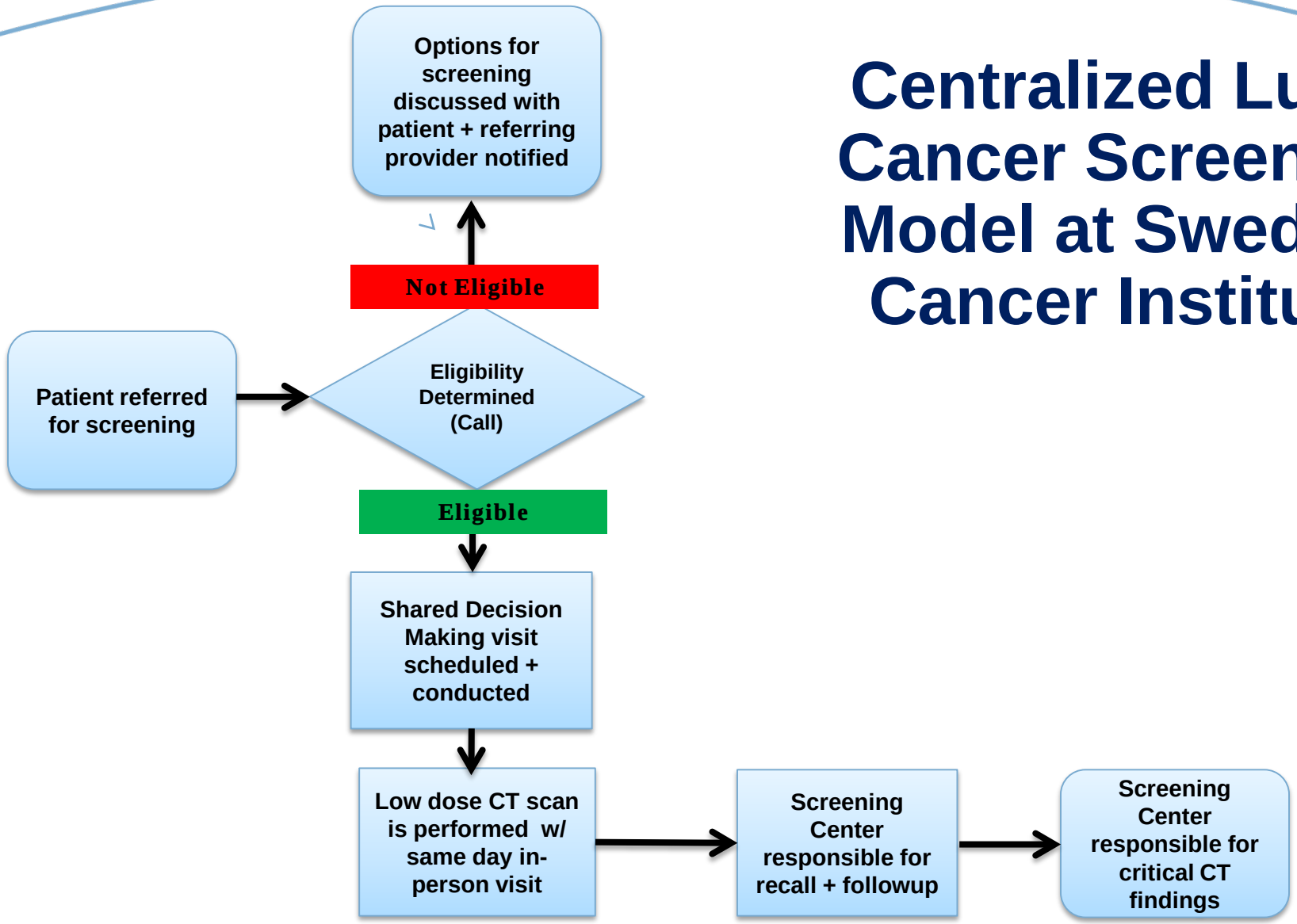
Centralized Lung Cancer Screening Model at Swedish Cancer Institute



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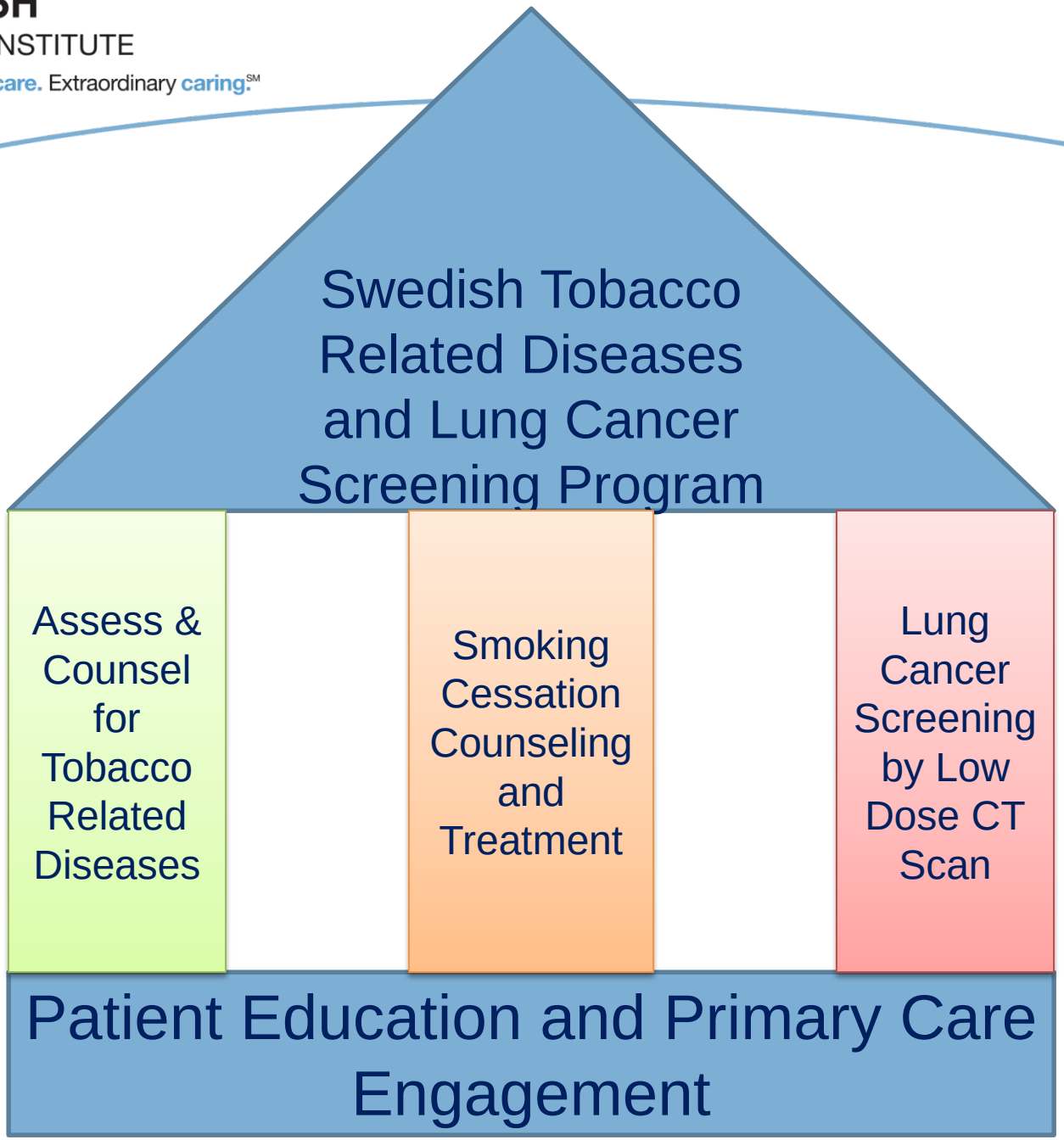

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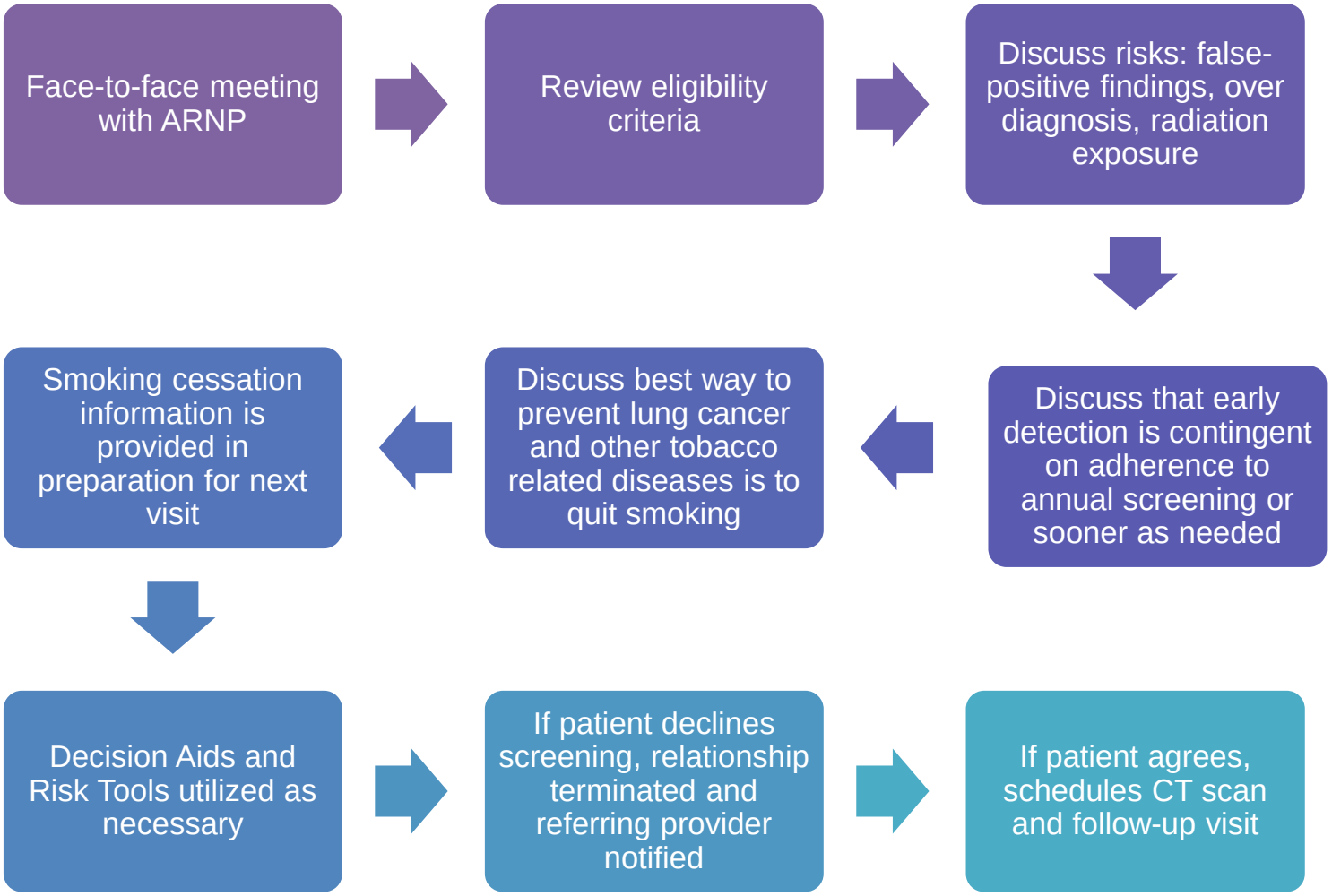
Shared Decision Making Visit



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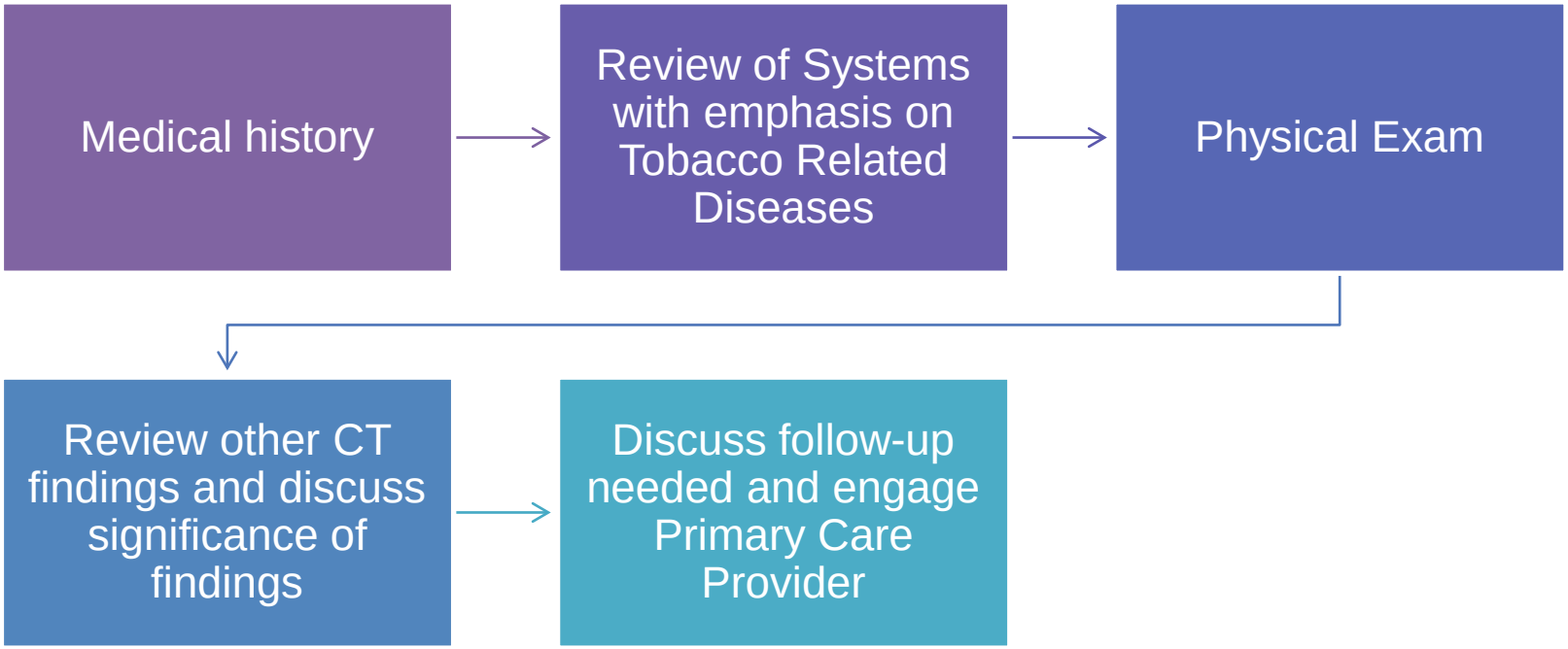
Clinical Pillar 1
Assessment and Counseling for Tobacco Related Diseases



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Prevalence of Tobacco Related Diseases and Other Imaging Findings

Type	Volume
Cardiac	63%
Emphysema	39%
Nodules ≥ 6mm	31%
Other CT Findings	20%
Aorta	8%
Liver	5%

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Improving Information Exchange and the Patient Experience in Delivery of Results

- Use less medical jargon
- Desire in person appointments to discuss results
- Want to see the nodules/images themselves
- Desire more information about what a lung nodule is
- Want to know the actual statistical risk of lung cancer
- Don’t want their nodules and concerns minimized
- Want to know more about the long range plan
- Prefer notification in person versus mail or phone

Slatore, C. G., et al. (2013). "What the heck is a "nodule"? A qualitative study of veterans with pulmonary nodules." Ann Am Thorac Soc 10(4): 330-335

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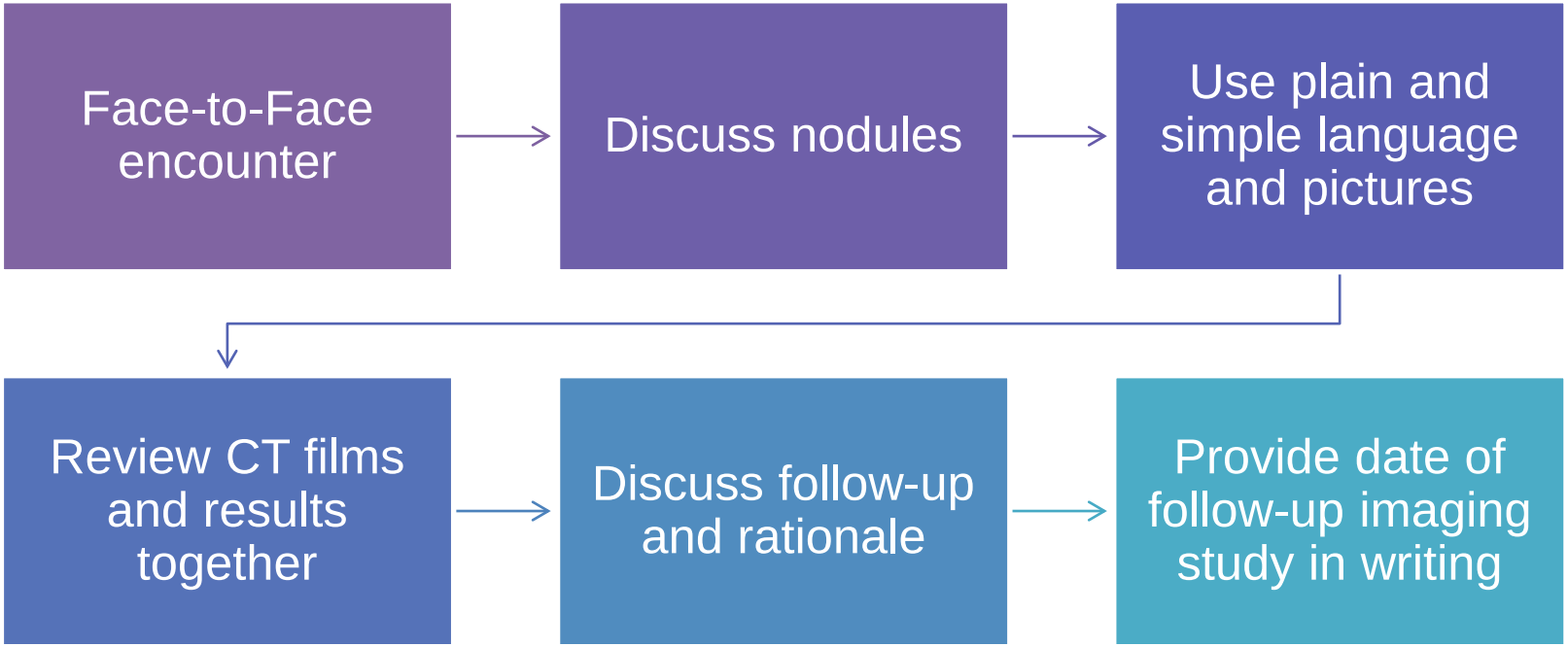
Clinical Pillar 2
CT Results Review
Improving Information Exchange and the Patient Experience



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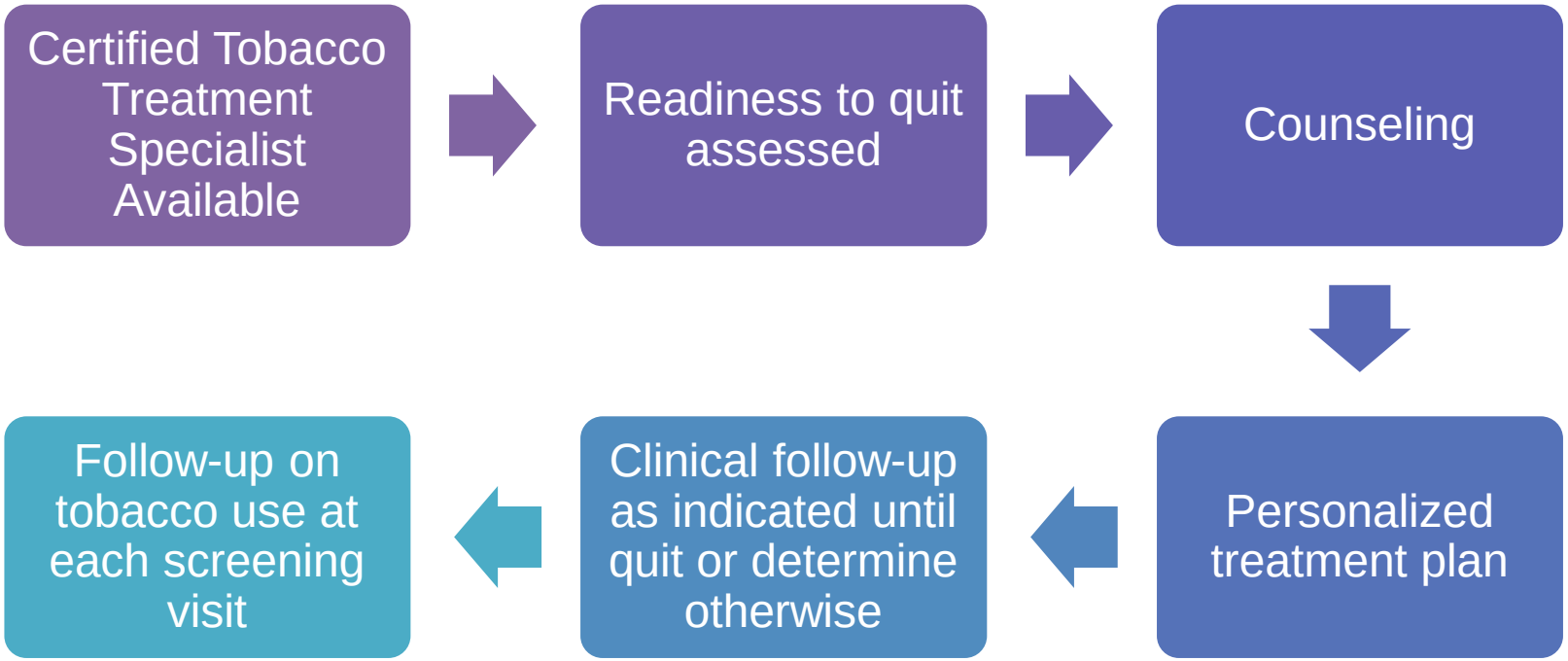
Clinical Pillar 3
Smoking Cessation Counseling and Treatment



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Smoking Cessation Success in Our Program

55% Smoking on Entrance into Lung Screening Program

96% Agree to Counseling

71% Agree to Treatment

53% Are Quit on Follow-up CT Scan

66% have Progressed in their Readiness to Quit Stages

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Nicotine Dependence is a Chronic Disease and Should be Treated Like One

- Treatment methods are well established and evidence based

Treatment saves lives!

- All clinicians should be well versed and comfortable with prescribing available treatments
- Tobacco treatment should be delivered as compassionately and aggressively as cancer care (ASCO, 2015)

Capitalize on Teachable Moments

- **Health related events spur behavior change and are teachable moments**
- **Teachable moments occur in a patient-clinician interaction**
- **Most patients want to quit but just don’t know how**

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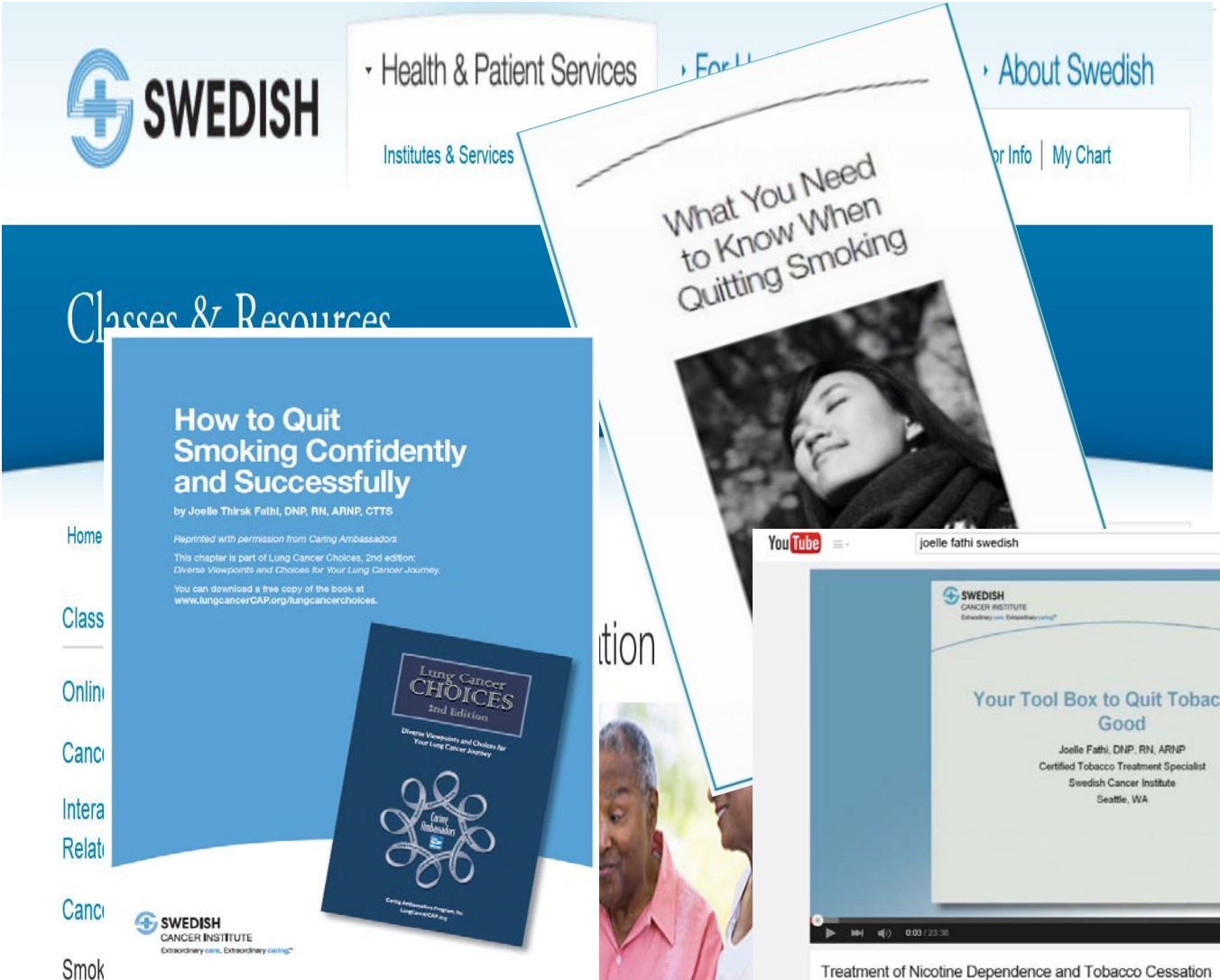
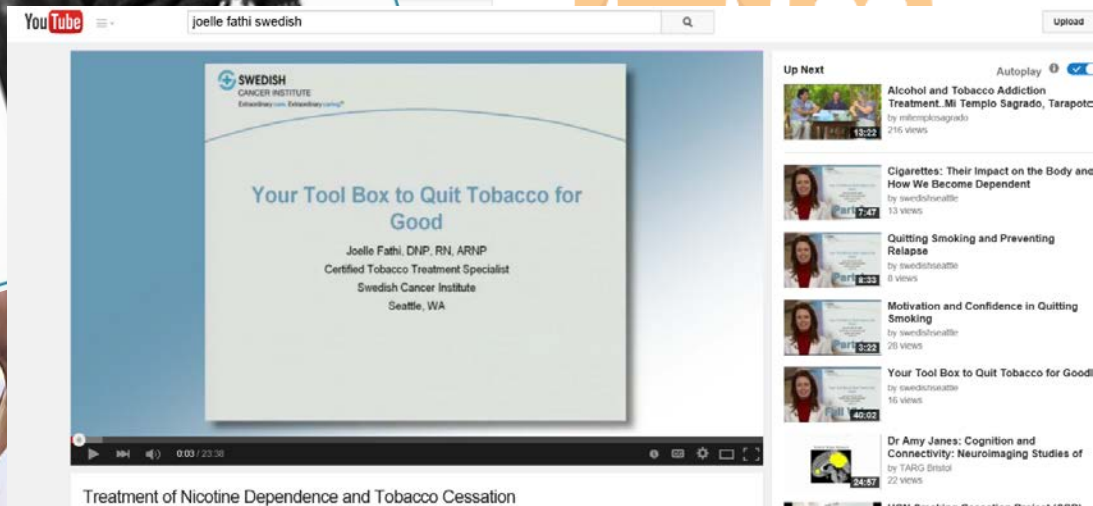
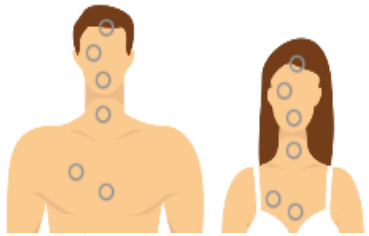
Emphasis on Education







Interactive: Smoking and Tobacco Related Diseases

Tobacco has existed for hundreds of years, all around the world. Most people have heard that tobacco and tobacco smoke are not good for us, but it can be difficult to understand how tobacco hurts our bodies from head to toe. The effects of tobacco and tobacco smoke are complex and include many different diseases and conditions ranging from cancer to diabetes; you can click on the circles below to learn more. Click here for references.

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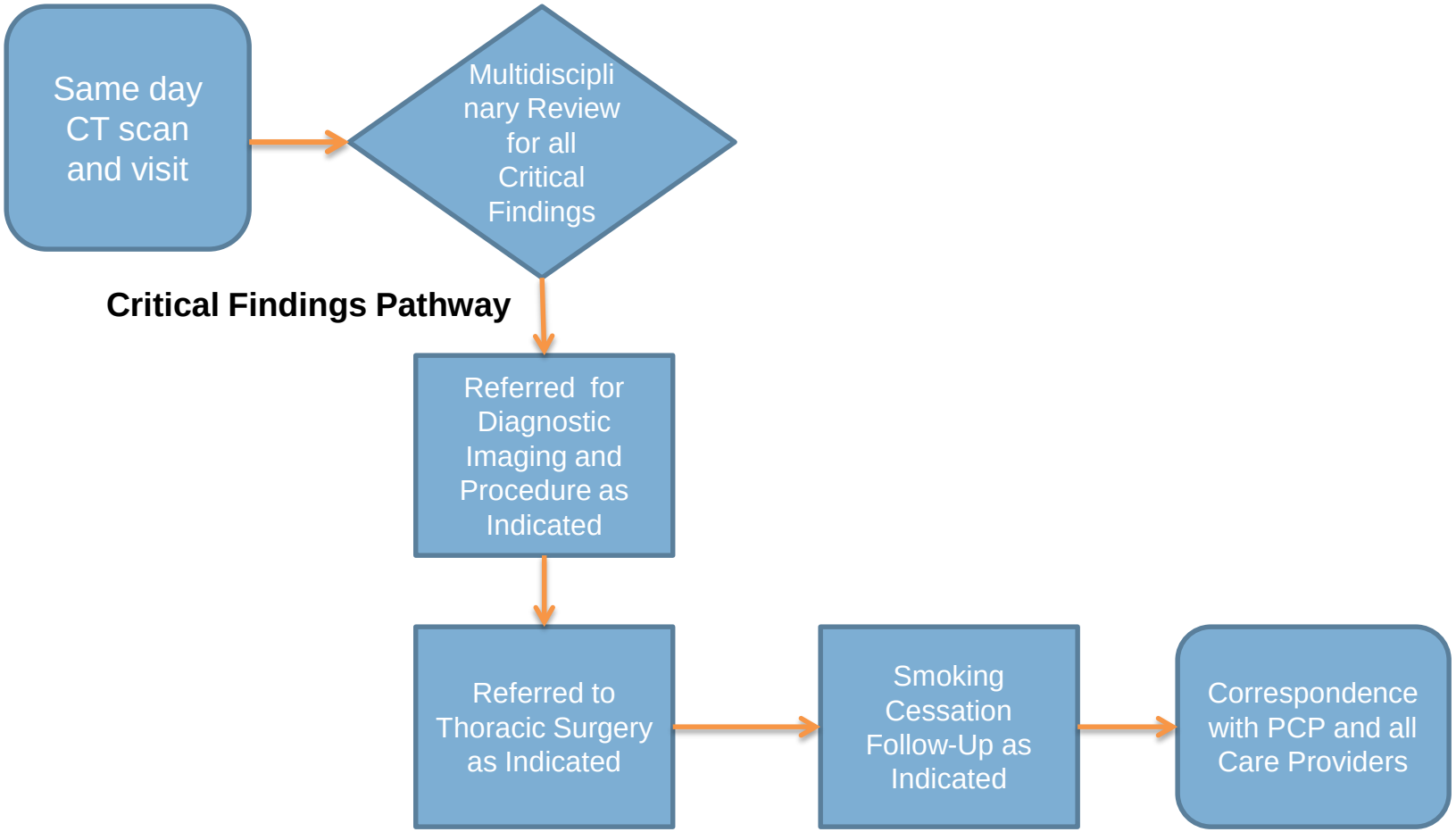
Multidisciplinary Work Flow for Critical Findings



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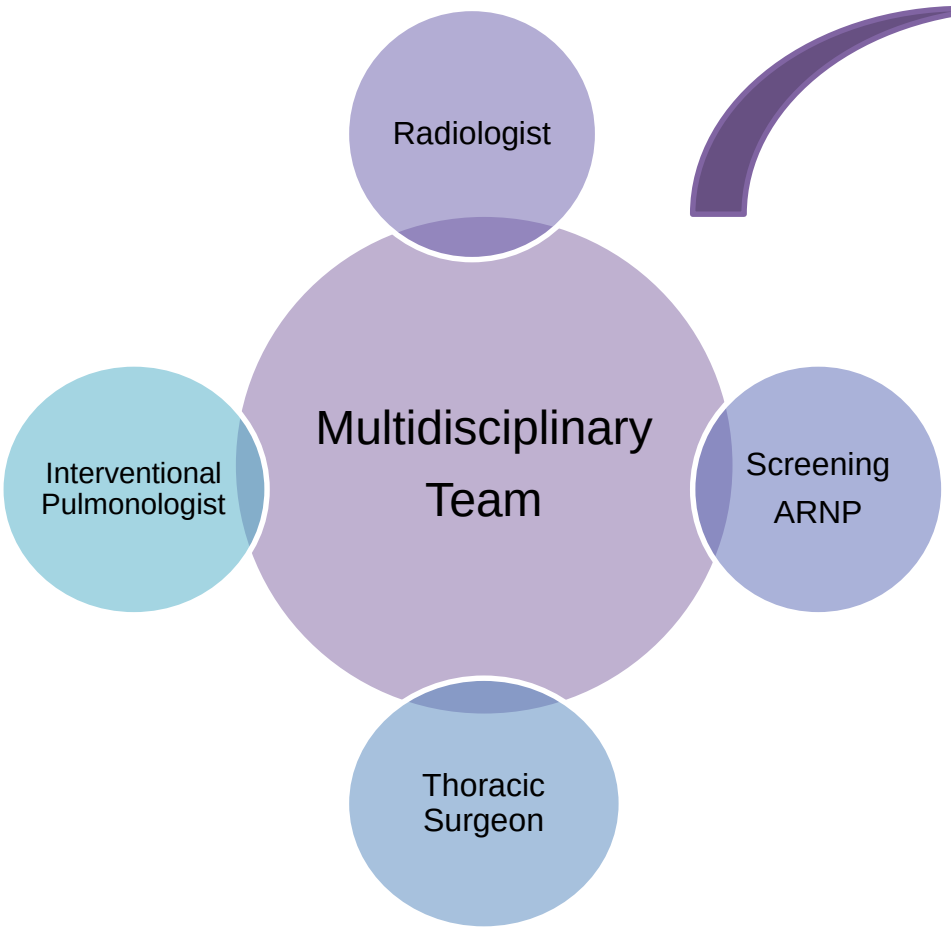
Nodule Management: Engaging the Multidisciplinary Team



- **Bimonthly meeting**
- **Review all critical findings**
- **Ensures adherence to clinical guidelines**
- **Establishes consensus in management of nodules**

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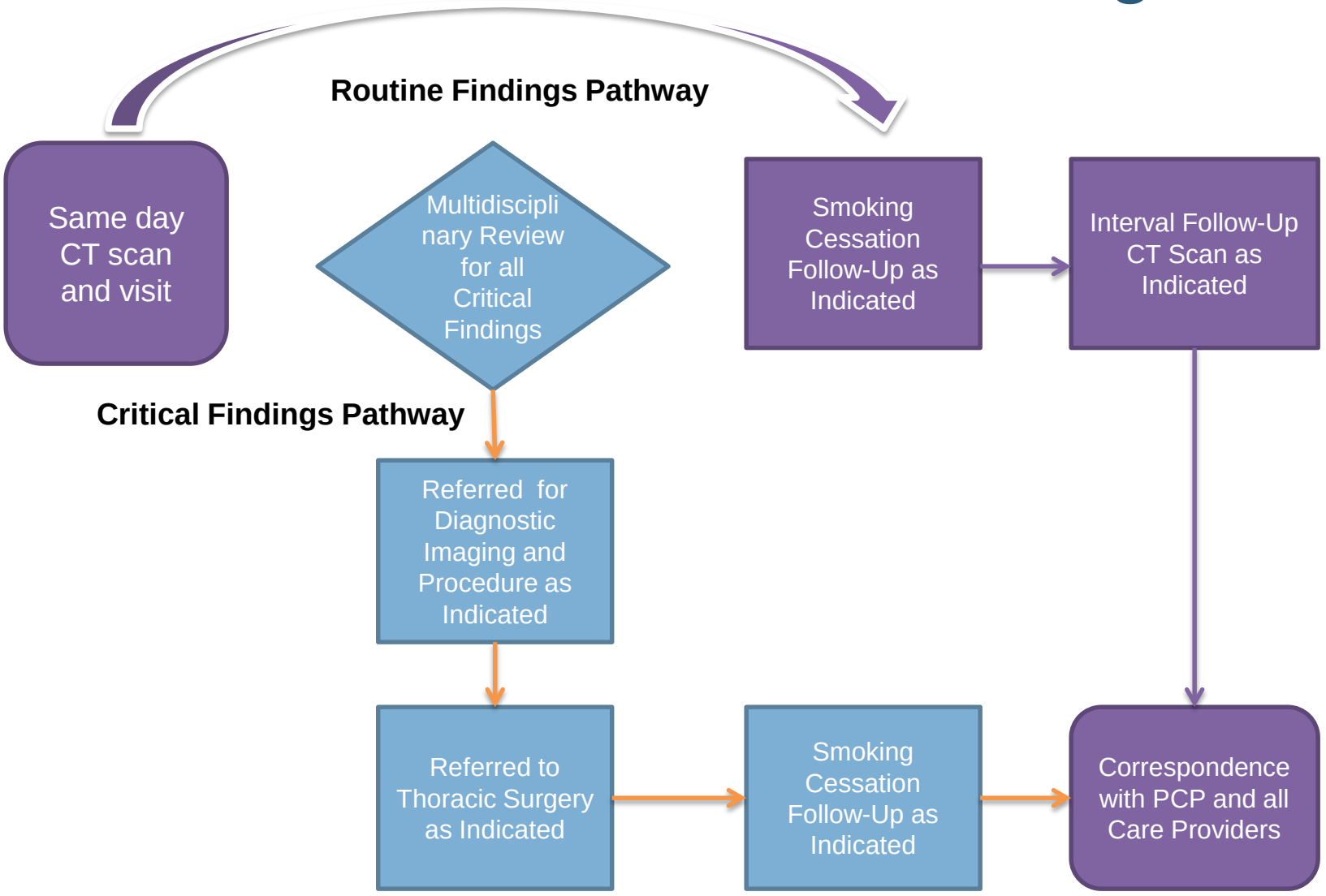
Work Flow for Routine Findings



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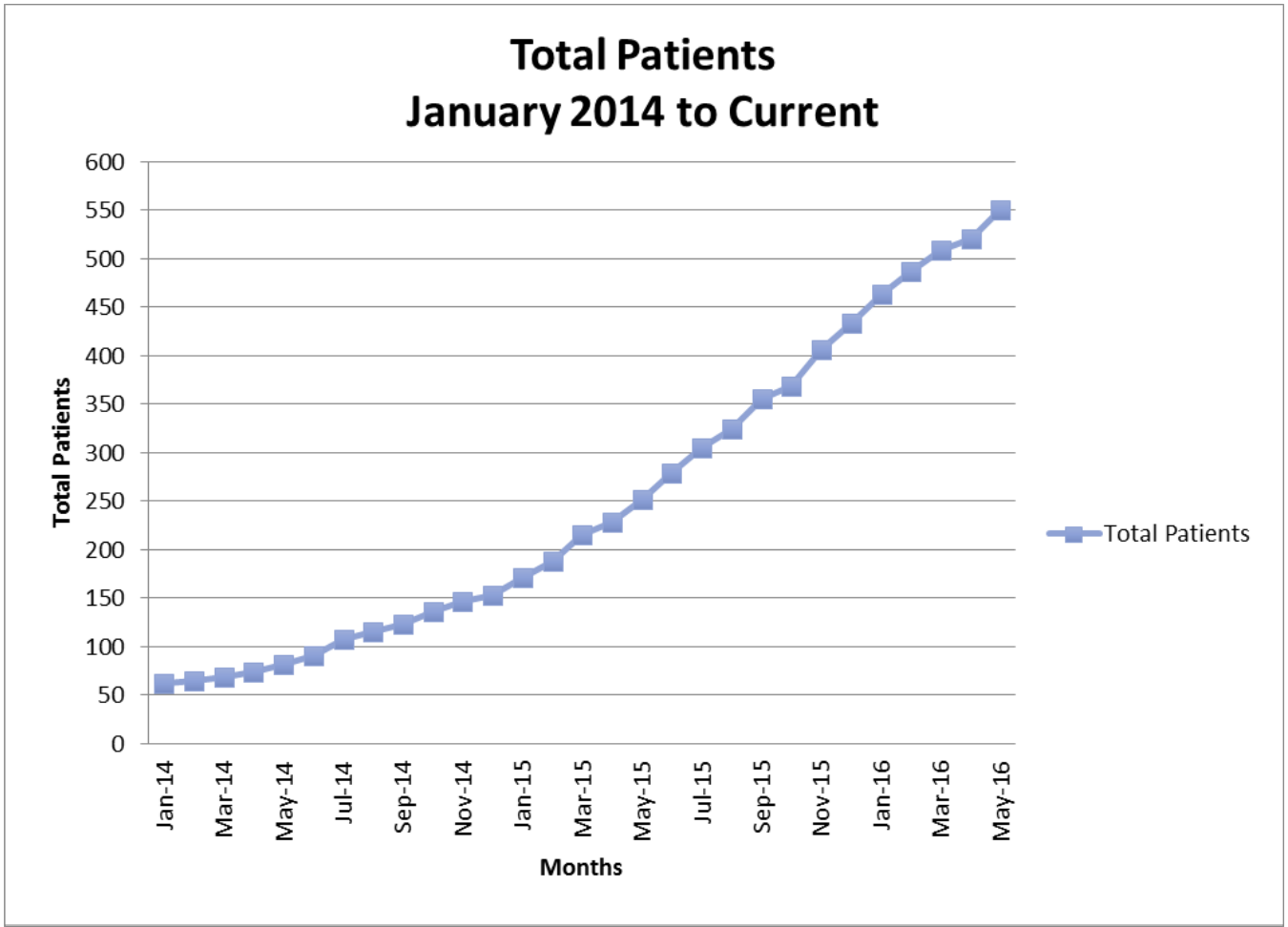
Trajectory of Program Growth



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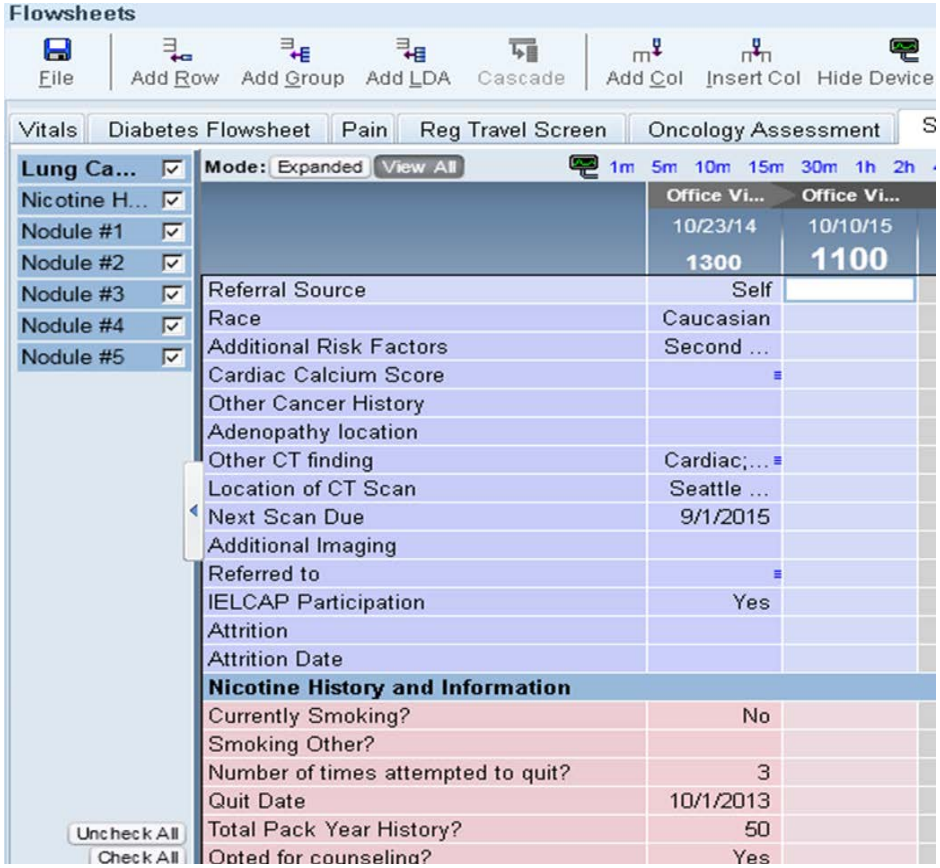
Internal Lung Cancer Screening Registry



- **Procedures and quality outcomes**
- **Nodule tracking/Recall**
- **Research**
- **CMS Registry**

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Cancers Detected in Screening Program

Cancers	Number
Early Stage Lung	13
Late Stage Lung	3
Metastatic Disease to Lung	2

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Case Study

72 y/o male with 68 pack year history. Currently smoking 10 cigarettes per day. ROS reveals worsening exercise tolerance with productive cough over the past year that now interferes with his ability to work as a carpenter in his shop. No formal pulmonary function tests, no history of diagnosis of emphysema or COPD.

Physical exam: Expiratory and inspiratory wheezes throughout.

Low dose CT scan: demonstrates moderate to severe emphysema, extensive CAD, and multiple lung nodules ≤ 5mm.

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Sample Clinical Note
New Patient , High Level Complexity Care and Time. (99205)

Assessment and Plan:

1. **<u>Lung Cancer Screening & Multiple Lung Nodules</u>: Screening low dose CT scan was performed today, the CT scan and results were reviewed with the patient. We discussed the prevalence of lung modules in the screening population which reaches 24%, the overall malignancy rate of 3% and high rate of benign findings. …**
2. **<u>Coronary Artery Disease:</u> Patient has evidence of extensive coronary artery disease on imaging today. He has the following risk factors for CAD: HTN, hyperlipidemia and active smoker, and asymptomatic. We discussed the value of quitting smoking …..**
2. **<u>Emphysema and DOE</u>: Patient has evidence of severe emphysema on imaging today. He reports having shortness of breath, dyspnea on exertion, chronic productive cough and declining exercise tolerance symptoms that are getting worse over the past year. The difference between emphysema findings and a clinical diagnosis of Chronic Obstructive Pulmonary Disease (COPD) ….**
3. **<u>Nicotine dependence:</u> Patient opted for smoking cessation counseling Yes. Significant time was spent discussing nicotine use and the neurohormonal influence of nicotine on the nicotinic acetylcholine receptors in the brain. Discussed what withdrawal looks like and how to avoid withdrawal …**

60 minutes was spent in this visit, > 50% of the time was spent counseling and coordinating care regarding the aforementioned assessment and plans.

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Sample Clinical Note Established Patient, Lower Complexity of Care and Time. Follow-up Visit (99214)

Assessment and Plan:

1. **<u>Lung Cancer Screening & Multiple Lung Nodules:</u> Screening low dose CT scan was performed today, the CT scan and results were reviewed with the patient. We discussed the prevalence of lung modules in the screening population which reaches 24%, the overall malignancy rate of 3% and high rate of benign findings. …**
2. **<u>Nicotine dependence:</u> Patient opted for smoking cessation counseling Yes. Significant time was spent discussing nicotine use and the neurohormonal influence of nicotine on the nicotinic acetylcholine receptors in the brain. Discussed what withdrawal looks like and how to avoid withdrawal …**

25 minutes was spent in this visit, > 50% of the time was spent counseling and coordinating care regarding the aforementioned assessment and plan.

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Sample Clinical Note
Established Patient, Lowest Complexity of Care and Time. Follow-up Visit (99213)

Assessment and Plan:

1. **<u>Lung Cancer Screening & Multiple Lung Nodules:</u> Screening low dose CT scan was performed today, the CT scan and results were reviewed with the patient. We discussed the prevalence of lung modules in the screening population which reaches 24%, the overall malignancy rate of 3% and high rate of benign findings. …**

15 minutes was spent in this visit, > 50% of the time was spent counseling and coordinating care regarding the aforementioned assessment and plan.

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Coding and Reimbursement

	Average Professional Revenue per Visit		
CPT Codes	Commercial	Medicaid/Medicare	Self Pay
99203	$110	$70	$174
99204	$200	$120	$250
99205	$250	$130	$300
99213	$99	$50	$99
99214	$120	$65	$155

	Commercial	Medicaid/Medicare	Self Pay
Payer Mix	47%	50%	3%

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Estimated Program Financials

	Year 1	Year 2	Year 3	Year 4
Patient Volumes				
New	480	480	480	480
Established	0	460	910	1,370
Total Patient Enrollment	480	940	1,390	1,850
(accounts for 4% attrition)				
Revenue				
New Patient Visits	$ 87,003	$ 87,003	$ 87,003	$ 87,003
Follow Ups		$ 46,000	$ 91,000	$ 137,000
Total	$ 87,003	$ 133,003	$ 178,003	$ 224,003
Costs				
ARNP Salary and Benefits	$ 130,000	$ 130,000	$ 130,000	$ 130,000
CME, Dues, Licenses	$ 2,500	$ 2,500	$ 2,500	$ 2,500
Taxes	$ 1,000	$ 1,000	$ 1,000	$ 1,000
Supplies	$ 3,000	$ 3,000	$ 3,000	$ 3,000
Occupancy	$ 40,000	$ 40,000	$ 40,000	$ 40,000
Total	$ 176,500	$ 176,500	$ 176,500	$ 176,500
Net Operating Income	**$ (89,497)**	**$ (43,497)**	**$ 1,503**	**$ 47,503**

Conservative Volumes

Break Even and Profit Years

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Generation of Downstream Activity from a Lung Cancer Screening Program

Imaging and Cancers Detected

- **Imaging 100%**
  - CT scans
  - PET scans
  - TTNB
- **Lung Cancer Cases 3.5%**
  - EBUS/Nav Bronch
  - Surgery
  - Chemo/Rads

Incidental Findings

- **Benign Esophageal**
- **Cardiac**
- **Pulmonary**
- **Vascular**

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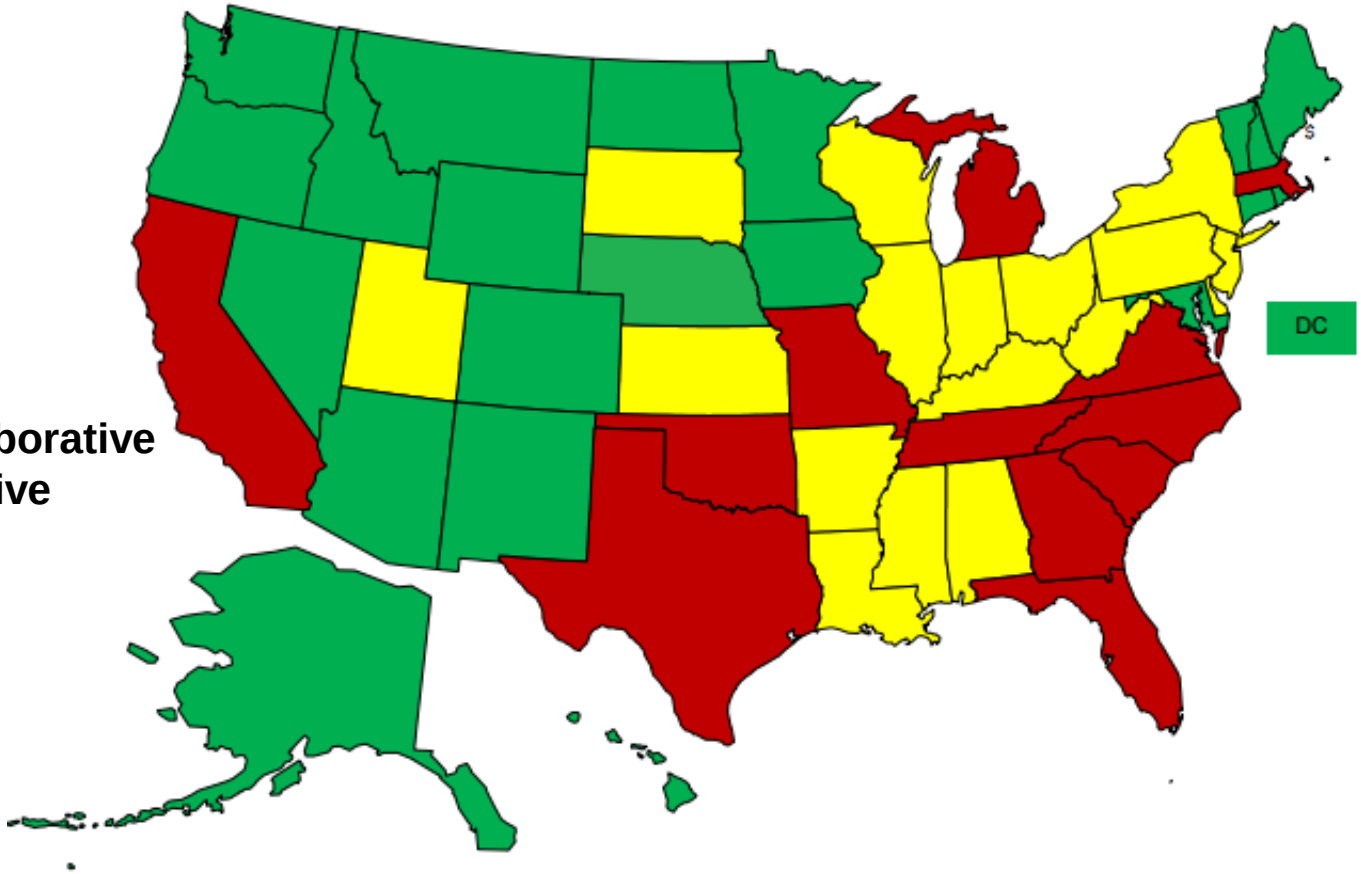
2015 Nurse Practitioner State Practice Environment



Green: Full
Yellow: Collaborative
Red: Restrictive

https://www.aanp.org/legislation-regulation/state-legislation/state-practice-environment

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Benefits of a Centralized Screening Program

- Meets CMS screening requirements
- A patient-centered care delivery model
- Capitalizes on a teachable moment
- Delivers a safe and responsible approach to screening and reduces potential harms
- Earlier detection of cancers and reduced downstream health care costs in cancer and tobacco related diseases care
- Aligns with basic public and community health principles while contributing to a healthier population through disease prevention by smoking cessation

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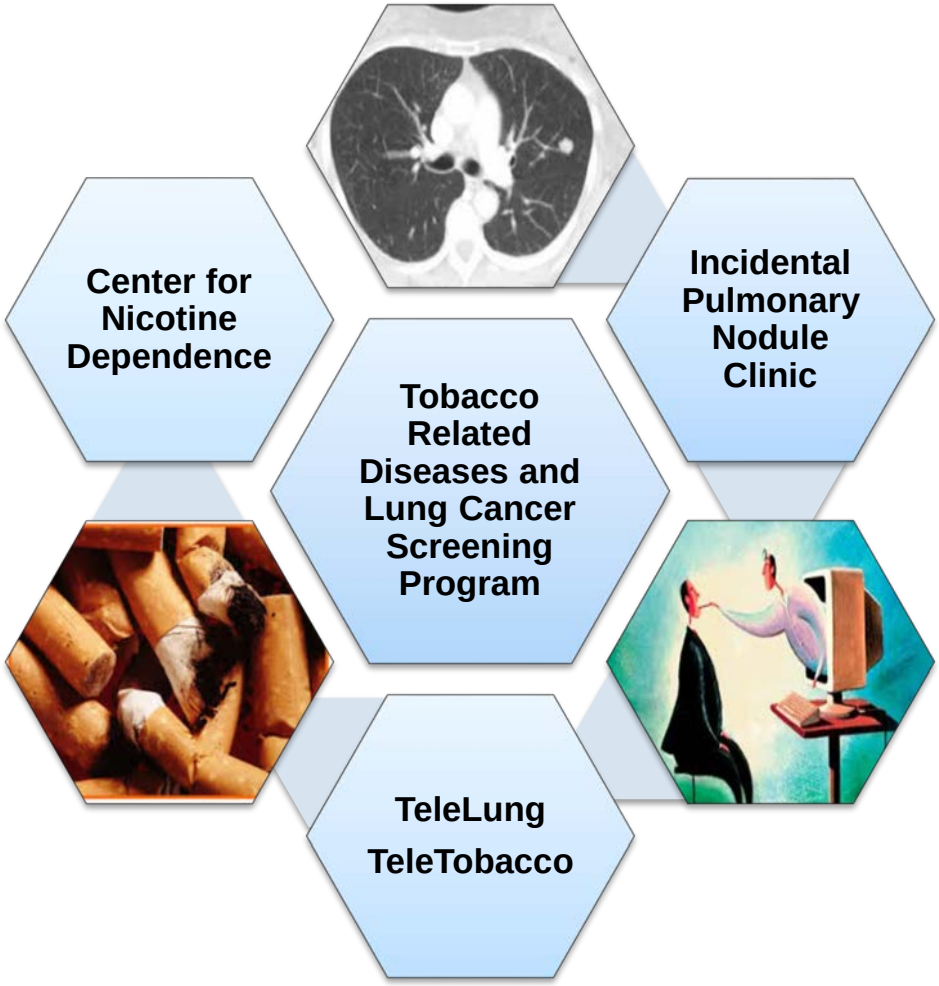
Taking Clinical Care One Step Further



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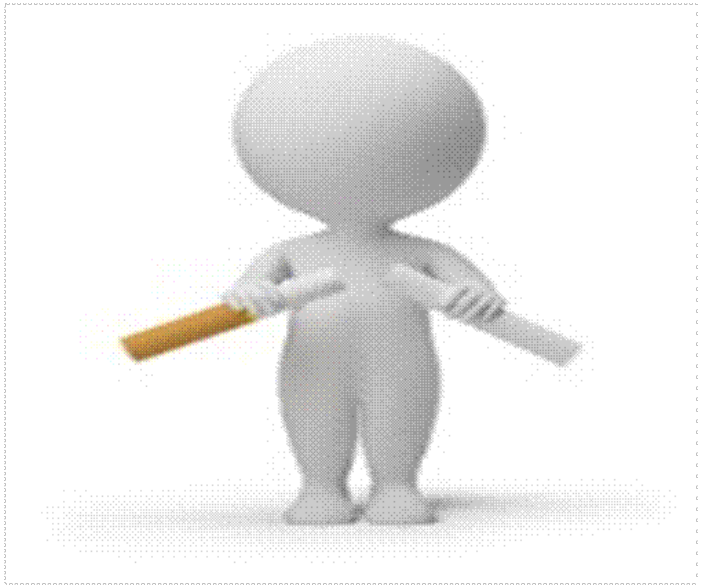

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